Lepidophyllum. These chapters are followed by a discussion of the floristic and ecological relationships of the plants, a table of the species with ample taxonomic notes, and some good plates of representative plants and plant formations.—HENRY C. COWLES.

Galvanotropism again.—Miss BAYLISS,[8] working at Birmingham under the direction of EWART, has studied the effect of electric currents applied directly to roots by electrodes, polarizable and non-polarizable, and indirectly by imbedding seedlings in a 3 per cent. gelatin solution between platinum electrodes 10–12^{cm} apart. The currents used were 4.2 volts with the resistance that of the gelatin for 48 hours, or of the roots alone (3–8 minutes), or 150,000 ohms, applied for 5 to 48 hours, or 220 volts with 2220 ohms applied for 50 seconds. She finds that it makes a difference where the electrodes are placed; when on opposite sides of the sensitive (growing) region the curvature is always toward the cathode, but if one is nearer the apex than the other the curvature is toward the apical electrode. Unlike PLOWMAN, whose papers she has overlooked, she found that curvatures could be produced without injury, even by strong currents of short duration. Contrary to GASSNER, whose mode of experimentation she deprecates; she concludes that the curvatures are due to the ions produced by electrolysis and that galvanotropism therefore is a form of chemotropism, and not necessarily of traumatropism.—C. R. B.

Embryogeny in Ephedra.—*Ephedra distachya* has been studied recently by Miss BERRIDGE and Miss SANDAY,[9] who find two markedly unequal male nuclei lying in a common cytoplasmic mass. The functioning male nucleus slips out of the cytoplasmic mass and passes to the egg nucleus. Although no case of fusion was observed, fertilization is thought to occur because proembryos are found which the authors can account for in no other way than by supposing fertilization has occurred. The jacket cells arise at the same time as the central cells. Later the nuclei of the jacket cells divide by direct division, the binucleate cells enlarge and become gorged with food, and the wall of the egg breaks down, permitting the jacket nuclei to escape. The jacket nuclei fuse in pairs within the egg and give rise to proembryos. In some cases the proembryos are merely enlarged jacket cells, proembryonal cells occur within jacket cells not adjacent to archegonia, and migration and fusion of the nuclei of neighboring jacket cells precede the formation of these proembryos. These are startling claims to make in connection with the embryogeny of a gymnosperm.—W. J. G. LAND.

Items of taxonomic interest.—N. C. KINDBERG (Rev. Bry. **34**:87–92. 1907), in notes on North American mosses, has described new species under Pseudoleskeella, Hypnum (2), Dichodontium, Grimmia (2), Bryum (4), and Pohlia.—

---

[8] BAYLISS, JESSIE S., On the galvanotropism of roots. Annals of Botany **21**: 387–405. *figs. 6.* 1907.

[9] BERRIDGE, ETHEL M., and SANDAY, ELIZABETH, Oogenesis and embryogeny in *Ephedra distachya.* New Phytologist **6**:128–134, 167–174. *pls. 3, 4.* 1907.

M. L. FERNALD (Rhodora **9**:140–146. 1907), in a presentation of the genus Suaeda in northeastern America, recognizes 4 species and describes one as new (*S. Richii*).—G. F. ATKINSON and C. W. EDGERTON (Jour. Mycol. **13**:185, 186. 1907; also Science N. S. **26**:385, 386. 1907) have published a new genus (*Protocoronospora*) of fungi discovered infecting the cultivated vetch, and have published it in two journals without any evidence as to which publication is to be regarded as the original one.—C. H. PECK (Bull. Torr. Bot. Club **34**:345–349. 1907) has described 12 new species of fleshy fungi, distributed among 8 genera.—E. HASSLER (Bull. Herb. Boiss. II. **7**:718–740. 1907), in continuation of his *Plantae Paraguariensis*, publishes a new genus (*Paradolichandra*) of Bignoniaceae.—L. RADLKOFER (Leaflets Philippine Bot. **1**:208–211. 1907) has published 4 new species of Sapindaceae from the Philippines.—J. M. C.

Movement of water.—DIXON adduces experimental evidence[10] that EWART'S estimates[11] of the velocity of the transpiration stream and the resistances it encounters are vastly too great. EWART calculated from his data that it would require a head of water 6–33 times the height of the tree to drive a sufficient amount of water against the resistance encountered. According to DIXON'S data, with liberal allowances for transpiration, it would suffice to have a head equal to the height of the tree. As to the soundness of the cohesion theory of the ascent of water, against which EWART had brought his conclusions as objections, DIXON says: "Apart from the weighty evidence which has elsewhere been adduced in its favor, the fact that other theories, both old and new, have to assume properties for the waterways of plants which are either in the highest degree improbable . . . . or are even directly negatived by experiment, seems to support the theory by a process of exclusion."—C. R. B.

Light perception.—Another adverse report on HABERLANDT'S theory of the lens-function of the epidermal cells in the perception of light is rendered by NORDHAUSEN.[12] Unlike HABERLANDT, who obliterated the lens action by a film of water, and KNIEP who reversed it by paraffin oil, NORDHAUSEN used a film of 5–10 per cent. gelatin, whose refractive index is almost that of cell contents. (By making the gelatin opaque with lamp black he used it also to exclude light from the petiole, for which it is much superior to leather or paper.) He found that the clear gelatin did actually eliminate the lens action of the convex cells, and testing the ability of the leaf to respond to light in the very plants used

[10] DIXON, H. H., On the transpiration current in plants. Proc. Roy. Soc. London B. **79**:41–57. 1907.

[11] EWART, A. E., Ascent of water in trees. Phil. Trans. Roy. Soc. London B. **198**:41–85. 1905. Also, The resistance to flow in wood vessels. Annals of Botany **19**:111. 1905.

[12] NORDHAUSEN, M., Ueber die Bedeutung der papillösen Epidermis als Organ für die Lichtperception des Laubblattes. Ber. Deutsch. Bot. Gesells. **25**:398–410. 1907.